ring preferably squeezes the channel **138**, decreasing the diameter of the channel **138** and constricting flow. The valve **139** may also include a flow sensor to detect the volume of fluid that has passed through the valve **139** to regulate the expansion and retraction of the cavities **125***a* and **125***b*. The valve **139** is preferably arranged within the sheet **111**, as shown in FIGS. **8***a*-**8***d*, but may alternatively be located outside of the sheet **111**, as shown in FIG. **14**. However, any other suitable orientation of the valve **139** may be used.

[0039] Alternatively, the displacement device **130** may include two fluid outlets and may function to displace fluid to a first fluid outlet to a first channel **138** coupled to the first cavity **125***a* and displace fluid to a second fluid outlet to a second channel **138** coupled to a second cavity **125***b*. In this variation, the selective expansion of the first and second cavities **125***a* and **125***b* is a direct result of the displacement of fluid caused by the displacement device **130** and not the result of redirecting the displaced fluid. The user interface system may also include a first displacement device **130** that functions to displace fluid to the first cavity **125***a* and a second displacement device **130** that functions to displace fluid to the second cavity **125***b*. Alternatively, the first and second displacement devices **130** may cooperate to control the flow of fluid into one or both of the cavities **125***a* and **125***b*. For example, in the variation where each of the plurality of cavities **125** expands with a different volume or pressure change, the first displacement device **130** may provide the volume or pressure change necessary to expand a first cavity **125***a* and the second displacement device **130** may provide the additional volume or pressure change necessary to expand a second cavity **125***b*. The first and second displacement devices **130** are preferably identical, but may alternatively have different fluid displacement properties to accommodate to different relative locations of the first and second cavities **125***a* and **125***b* and/or different geometries of the first and second cavities **125***a* and **125***b*. However, any other suitable arrangement of displacement devices **130** and first and second cavities **125***a* and **125***b* may be used.

[0040] The second preferred embodiment preferably includes a processor that controls the displacement device **130** and the valve **139**. The processor preferably determines if only one or both of the cavities **125***a* and **125***b* are to be expanded and actuates the displacement device **130** to displace the suitable volume of fluid to expand one or both of the cavities **125***a* and **125***b* to the desired amount as well as actuates the valve **139** to direct the fluid to the desired cavities **125***a* and **125***b*. In the second preferred embodiment, the volume of fluid that is displaced may be controlled by controlling the length of time that the displacement device **130** is actuated as described in the first embodiment, but may also be controlled by actuation of the valve **139** to direct fluid in any one direction. For example, in the bi-state variation of the valve **139**, the fluid flow through the channel **138** may be a constant rate and the processor may actuate the valve **139** into the OPEN state for a period of time to allow the desired volume of fluid to flow through. Alternatively, the system **100** may include a flow sensor located within the cavity **125**, valve **139**, the channel **138**, and/or the reservoir **133** that detects the increase in volume of the fluid and/or the flow of fluid into the cavity **125** to determine whether the adequate amount of flow or change in volume and/or pressure has been completed. Alternatively, the displacement device **130** may function to provide a constant pressure within the fluid network **200**. Once a valve **139** is in the OPEN state, fluid may flow into the cavity **125** corresponding to the valve **139** and the overall pressure within the fluid network **200** may decrease and the displacement device **130** is then actuated to increase the pressure within the fluid network **200** to the desired pressure, filling the cavity **125**. To drain fluid from an expanded cavity **125**, the displacement device **130** may function to decrease the pressure within the fluid network **200** to facilitate draining of fluid from the cavity **125**. However, the processor may regulate the volume of fluid that is displaced into the cavities **125***a* and **125***b* with any other suitable method. Regulating the amount of flow or change in volume and/or pressure provided by the displacement device **130** may prevent or help decrease the over-expansion or over-retraction of the cavities **125**. This regulation also allows for the possibility of varying degrees of expansion or retraction of individual cavities **125**, for example, a half expanded state and a fully expanded state, depending on the type of user interface scenario.

3. Third Preferred Embodiment

Selective Expansion of Groups

[0041] In the third preferred embodiment, as shown in FIGS. **14-15**, a first group of cavities **125** and a second group of cavities **125** are selectively expanded. Similar to the second preferred embodiment, the displacement device **130** of the third preferred embodiment preferably expands the first and second groups of cavities **125** in two modes: a first mode where only one of the first and second groups of cavities **125** is expanded, and a second mode where both of the first and second groups of cavities **125** are expanded. Alternatively, the displacement device **130** may expand only one of the first and second groups **125** at any one time. Each group of cavities **125** are preferably arranged as described in the first preferred embodiment and preferably functions to provide a particular interface for the user and preferably includes a number of cavities **125** suitable for the application, for example, a number dial pad or a QWERTY keyboard. The groups of cavities **125** may be placed adjacent to one another (for example, a QWERTY keyboard group adjacent to a number dial pad group, as shown in FIG. **15***a*) and/or interspersed with one another (for example, the QWERTY keyboard group is interleaved with the number pad group, as shown in FIG. **15***b*). In this variation, the branches of the channel **138** that couple each of the cavities **125** to the displacement device **130** may be arranged along different height levels within the sheet **111**, as shown in FIG. **16**. This may allow for the branches of the channel **138** to be arranged within a sheet in with a surface **115** of a lower surface area and/or allow each of the plurality of cavities **125** to be placed in closer proximity to each other. The branches of the channel **138** may be arranged in one of a variety of arrangements. In a first example, the branches coupling the cavities of the first group of cavities **125** to the displacement device **130** may be placed along a first height level within the sheet in and the branches coupling the cavities of the second group of cavities **125** to the displacement device **130** may be placed along another height level within the sheet **111**. In a second example, the branches leading to each cavity **125** within one group of cavities **125** may be arranged on different height levels within the sheet **111**. In a third example, the branches coupling a first subset of the cavities within a group of cavities **125** to the displacement device **130** may be arranged on a first height level within the sheet in and the branches coupling a second subset of the cavities within the group of cavities **125** to the displacement device **130** may